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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/826,582

04/16/2004

Rolf Pfeifer

3926.081

1763

30448 7590 11/01/2007  
AKERMAN SENTERFITT  
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EXAMINER

LIN, ING HOUR

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

11/01/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/826,582	PFEIFER ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Ing-Hour Lin	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 21-22, 25-27, and 30-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcus et al in view of Nagai et al.

Marcus et al (col. 6 lines 56+) teach the claimed investment casting mold and insert (core) for casting metals including porous ceramic produced by selectively sintering on binder coated ceramic particles, and teach methods of producing a green casting mold by rapid prototyping method including 3D construction using CAD/CAM system and laser beam for sintering a first layer of composite ceramic powders deposited on support plate (target surface), wherein the powder comprising alumina particles coated by polymer binder and finer ammonium

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dihydrogen phosphate having lower sintering temperature. Marcus et al fail to teach the use of resin having relatively high thermal expansion coefficient required for coating the coarse alumina particle.

However, Nagai et al (col. 2, lines 20+) teach the use of bonding or coating resin having relatively high thermal expansion coefficient of  $(3-10 \times 10^{-6} \text{ K}^{-1})$  and melted silica forming ceramic core layer for the purpose of matching thermal expansion. It would have been obvious to one having ordinary skill in the art to provide Marcus et al the use of bonding or coating resin having relatively high thermal expansion coefficient of  $(3-10 \times 10^{-6} \text{ K}^{-1})$  forming ceramic core layer as taught by Nagai et al in order to effectively increase thermal expansion coefficient of core and mold for matching metal cast and improving casting quality of precision.

4. Claims 23-24 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcus et al in view of Nagai et al and further in view of either Zoia et al or Smith et al.

Marcus et al in view of Nagai et al fails to teach the use of optimal design including reinforcing ribs and cooling channels and support including back-fed ceramic material.

However, Zoia et al (col. 3, lines 3+) teach the use of optimal design including reinforcing ribs 100 and cooling channels for the purpose of controlling both strength and structure. Smith et al (col.4, lines 10+) teach the support including back-fed ceramic material such as unconsolidated mold 41 formed from alumina for the purpose of supporting the mold during casting. It would have been obvious to one having ordinary skill in the art to provide Marcus et al in view of Nagai et al the use of optimal design including reinforcing ribs and cooling channels as taught by Zoia et al in order to effectively control both strength and structure

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and the use of support including back-fed ceramic material as taught by Smith et al in order to effectively support the mold during casting.

5. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcus et al in view of Nagai et al and further in view of Kington.

Marcus et al in view of Nagai et al fails to teach the use of matching the coefficient of thermal expansion between the casting mold and the supper alloys to be cast in the mold.

However, Kington (col. 1, lines 43+) teaches the use of matching the coefficient of thermal expansion between the casting mold and the Ni-supper alloys to be cast in the mold for the purpose of preventing porosity in the cast alloys. It would have been obvious to one having ordinary skill in the art to provide Marcus et al in view of Nagai et al the use of matching the coefficient of thermal expansion between the casting mold and the Ni-supper alloys to be cast in the mold as taught by Kington in order to prevent porosity in the cast alloys.

#### ***Response to Arguments***

6. Applicant's arguments filed 8/13/07 have been fully considered but they are not persuasive. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In the remark applicant argued that Marcus et al fail to teach the

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use of resin having relatively high thermal expansion coefficient required for coating the coarse alumina particle. However, Nagai et al (col. 2, lines 20+) teach the use of bonding or coating resin having relatively high thermal expansion coefficient of  $(3-10 \times 10^{-6} \text{ K}^{-1})$  and melted silica forming ceramic core layer for the purpose of matching thermal expansion. It would have been obvious to one having ordinary skill in the art to provide Marcus et al the use of bonding or coating resin having relatively high thermal expansion coefficient of  $(3-10 \times 10^{-6} \text{ K}^{-1})$  forming ceramic core layer as taught by Nagai et al in order to effectively increase thermal expansion coefficient of core and mold for matching metal cast and improving casting quality of precision.

Further, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., guarantee a sufficient good dimensional ability of the casting mold) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (9:00-5:30).

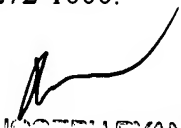
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jonathan Johnson can be reached on (571) 272-1177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*IHL*

I.-H. Lin

10/29/07

  
PATRICK JOSEPH RYAN  
SUPERVISORY PATENT EXAMINER